

Amendments to the Claims

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of claims

Claim 1: (CURRENTLY AMENDED) A method of managing [[a]] an operational network comprising the steps of:

polling resources of the operational network to gather real-time status information about the operational network;

evaluating performance of the operational network by identifying network-wide patterns in the gathered real-time status information; and

based on the result of said step of evaluating, providing a prediction of a future network-wide performance problem.

Claim 2: (PREVIOUSLY PRESENTED) The method of claim 1 further comprising the step of:

determining an action for preventing the future network-wide performance problem from occurring.

Claim 3: (PREVIOUSLY PRESENTED) The method of claim 2 wherein said determining step includes determining the action from at least one previously defined rule.

Claim 4: (CURRENTLY AMENDED) The method of claim 2 further comprising the step of:

initiating the action before the future network-wide performance problem [[occurring]] occurs in an attempt to prevent the future network-wide performance problem.

Claim 5: (CURRENTLY AMENDED) The method of claim 1 wherein said step of evaluating performance of the operational network further includes:

correlating the real-time status information with at least one previously defined rule.

Claim 6: (CURRENTLY AMENDED) The method of claim 5 wherein the at least one previously-defined rule defines a known pattern for the gathered real-time status information that foreshadows [[the]] an occurrence of the future network-wide performance problem.

Claim 7: (CURRENTLY AMENDED) The method of claim 1 wherein the future network-wide performance problem is caused by anyone or more of the problems selected from:

operability problem of the resources of the operational network, operability problem of the operational network, failure of the resources of the operational network, failure of the operational network, integrity problem of the resources of the operational network, integrity problem of the operational network, efficiency problem of the resources of the operational network, efficiency problem of the operational network, decreased processing speed of the resources of the operational network, decreased processing speed of the operational network, usage capacity problem of the resources of the operational network, and usage capacity problem of the operational network.

Claim 8: (PREVIOUSLY PRESENTED) The method of claim 1 wherein said step of polling resources includes gathering the real-time status information for anyone or more of:

network status, disk status, database status, memory status, CPU status, and operating system status.

Claim 9: (CURRENTLY AMENDED) The method of claim 1 wherein said step of polling resources includes gathering the real-time status information by a plurality of distributed gateways that are communicatively coupled to a central management system capable of overseeing the operation of the operational network.

Claim 10: (PREVIOUSLY PRESENTED) The method of claim 3 wherein the at least one previously defined rule includes at least one user defined rule.

Claim 11: (CURRENTLY AMENDED) The method of claim 3 wherein the at least one previously defined rule is implemented as software code executing on a management system capable of overseeing the operation of the operational network.

Claim 12: (PREVIOUSLY PRESENTED) The method of claim 3 further comprising:
the at least one previously defined rule correlating disparate network elements.

Claim 13: (CURRENTLY AMENDED) The method of claim 3 further comprising:
the at least one previously defined rule correlating disparate characteristics of the
resources of the operational network.

Claim 14: (CURRENTLY AMENDED) The method of claim 13 wherein said disparate
characteristics include those selected from:

CPU run queue capacity, CPU run queue blocks, CPU run queue waits, context
switching, memory paging, swap allocation, disk writes, disk blocking, disk waiting, and disk
utilization, ~~network inbound packets, network outbound packets, network errors, and network~~
~~collisions.~~

Claim 15: (CURRENTLY AMENDED) A system for managing ~~[[a]]~~ an operational network,
said system comprising:

at least one polling gateway that is operable to poll one or more network elements to
gather real-time status information for said one or more network elements;

at least one processor-based management server communicatively coupled to the at
least one polling gateway to receive the gathered real-time status information from said at
least one polling gateway; and

the at least one processor-based management server predicting the occurrence of a
network-wide performance problem within the operational network based on the gathered
real-time status information.

Claim 16: (CURRENTLY AMENDED) The system of claim 15 wherein said one or more
network elements include a plurality of network elements distributed in the operational
network.

Claim 17: (ORIGINAL) The system of claim 15 wherein said one or more network elements
include a plurality of disparate network elements.

Claim 18: (ORIGINAL) The system of claim 15 wherein said at least one polling gateway includes a plurality of distributed polling gateways.

Claim 19: (ORIGINAL) The system of claim 15 wherein said plurality of distributed polling gateways include polling gateways that are each operable to poll particular ones of disparate network elements.

Claim 20: (PREVIOUSLY PRESENTED) The system of claim 19 wherein said disparate network elements include network elements that communicate in different network protocols.

Claim 21: (PREVIOUSLY PRESENTED) The system of claim 20 wherein said disparate network elements include network elements selected from: SNMP network elements, CMIP network elements, and network elements using TCP/IP protocol.

Claim 22: (PREVIOUSLY PRESENTED) The system of claim 15 wherein at least one rule defines an appropriate action for said at least one processor-based management server to respond to a defined condition being detected.

Claim 23: (PREVIOUSLY PRESENTED) The system of claim 22 wherein said appropriate action is an action for attempting to prevent the network-wide performance problem predicted by the detection of said defined condition from occurring.

Claim 24: (PREVIOUSLY PRESENTED) The system of claim 22 wherein upon detection of said defined condition, said at least one processor-based management server initiates said appropriate action before said network-wide performance problem occurring.

Claim 25: (PREVIOUSLY PRESENTED) The system of claim 15 wherein at least one rule defines a known pattern for status information that foreshadows the occurrence of said network-wide performance problem.

Claim 26: (PREVIOUSLY PRESENTED) The system of claim 15 wherein at least one rule defines statistical analysis of said status information that foreshadows the occurrence of said network-wide performance problem.

Claim 27: (PREVIOUSLY PRESENTED) The system of claim 15 wherein at least one rule defines a known correlation of status information that foreshadows the occurrence of said network-wide performance problem.

Claim 28: (CURRENTLY AMENDED) The system of claim 15 wherein said network-wide performance problem is caused by anyone or more of the problems selected from:

operability problem of said one or more network elements, operability problem of the operational network, failure of said one or more network elements, failure of the operational network, integrity problem of said one or more network elements, integrity problem of the operational network, efficiency problem of said one or more network elements, efficiency problem of the operational network, decreased processing speed of said one or more network elements, decreased processing speed of the operational network, usage capacity problem of said one or more network elements, and usage capacity problem of the operational network.

Claim 29: (PREVIOUSLY PRESENTED) The system of claim 15 wherein said status information includes one or more from:

network status, disk status, database status, memory status, CPU status, and operating system status.

Claim 30: (CURRENTLY AMENDED) A management system for managing one or more layers of a operational network, wherein said managing includes predicting network-wide performance problems that are to occur within one or more layers of the operational network and taking responsive actions in an attempt to prevent or timely respond to the predicted said network-wide performance problems, said management system comprising:

at least one processor-based management server communicatively coupled to at least one polling gateway that is operable to poll at least one network element to gather real-time status information for said at least one network element;

the at least one processor-based management server including software code executing thereon, wherein said software code learns a condition for predicting said network-wide performance problem within one or more layers of the operational network from said gathered real-time status information to enable the processor-based management server to

predict the occurrence of said network-wide performance problem within the operational network.

Claim 31: (CURRENTLY AMENDED) The management system of claim 30 wherein said at least one network element ~~[[include]]~~ includes a plurality of said at least one network element distributed in the operational network.

Claim 32: (CURRENTLY AMENDED) The management system of claim 30 wherein said at least one network element ~~[[include]]~~ includes a plurality of disparate said at least one network element.

Claim 33: (ORIGINAL) The management system of claim 30 wherein said at least one polling gateway includes a plurality of distributed polling gateways.

Claim 34: (CURRENTLY AMENDED) The management system of claim 30 wherein said plurality of distributed polling gateways ~~[[include]]~~ includes polling gateways that are each operable to poll particular ones of disparate said at least one network element.

Claim 35: (CURRENTLY AMENDED) The management system of claim 34 wherein the disparate said at least one network element ~~[[include]]~~ includes said at least one network element that ~~[[communicate]]~~ communicates in different network protocols.

Claim 36: (CURRENTLY AMENDED) The management system of claim 35 wherein the disparate said at least one network element ~~[[include]]~~ includes said at least one network element selected from: SNMP network elements, CMIP network elements, and network elements using TPC/IP protocol.

Claim 37: (PREVIOUSLY PRESENTED) The management system of claim 30 wherein at least one rule defines an action for said at least one processor-based management server to take in response to said condition being detected.

Claim 38: (PREVIOUSLY PRESENTED) The management system of claim 37 wherein said action is an action for attempting to prevent the network-wide performance problem predicted by the detection of said condition from occurring.

Claim 39: (PREVIOUSLY PRESENTED) The management system of claim 37 wherein upon detection of said condition said at least one processor-based management server initiates said action before said network-wide performance problem occurs.

Claim 40: (PREVIOUSLY PRESENTED) The management system of claim 30 wherein said condition includes a pattern for status information that foreshadows the occurrence of said network-wide performance problem.

Claim 41: (PREVIOUSLY PRESENTED) The management system of claim 30 wherein said condition includes statistical analysis of said status information that foreshadows the occurrence of said network-wide performance problem.

Claim 42: (PREVIOUSLY PRESENTED) The management system of claim 30 wherein said condition includes correlation of status information that foreshadows the occurrence of said network-wide performance problem.

Claim 43: (CURRENTLY AMENDED) The management system of claim 30 wherein said network-wide performance problem is caused by anyone or more of the problems selected from:

operability problem of said at least one network element, operability problem of the operational network, failure of said at least one network element, failure of the operational network, integrity problem of said at least one network element, integrity problem of the operational network, efficiency problem of said at least one network element, efficiency problem of the operational network, decreased processing speed of said at least one network element, decreased processing speed of the operational network, usage capacity problem of said at least one network element, and usage capacity problem of the operational network.

Claim 44: (PREVIOUSLY PRESENTED) The management system of claim 30 wherein said status information includes one or more from:

network status, disk status, database status, memory status, CPU status, and operating system status.

Claim 45: (ORIGINAL) The management system of claim 30 wherein said at least one network element is represented as an object within object-oriented software executing on the processor-based server, said object having one or more attributes for which said status information may be gathered.

Claim 46: (PREVIOUSLY PRESENTED) The management system of claim 45 wherein said condition includes correlation of one or more attributes of one or more objects to define the prediction of said network-wide performance problem.

Claim 47: (ORIGINAL) The management system of claim 30 wherein said management system includes a business management layer.

Claim 48: (PREVIOUSLY PRESENTED) The management system of claim 47 wherein said network-wide performance problem includes a business performance problem.

Claim 49: (ORIGINAL) The management system of claim 48 wherein said at least one network element includes an electronic commerce system for processing commercial transactions with customers via the Internet, and wherein said business performance problem includes a problem resulting in inability of said electronic commerce system processing said commercial transactions.

Claim 50: (ORIGINAL) The management system of claim 30 wherein said management system includes a service management layer.

Claim 51: (PREVIOUSLY PRESENTED) The management system of claim 50 wherein said network-wide performance problem includes a service performance problem.

Claim 52: (CURRENTLY AMENDED) The management system of claim 51 wherein said service performance problem includes problem with the quality provided to subscribers or clients of the operational network.

Claim 53: (ORIGINAL) The management system of claim 30 wherein said management system includes a network management layer.

Claim 54: (CANCELED)

Claim 55: (ORIGINAL) The management system of claim 30 wherein said management system includes an element management layer.

Claim 56: (PREVIOUSLY PRESENTED) The management system of claim 55 wherein said network-wide performance problem includes a network element performance problem.

Claim 57: (ORIGINAL) The management system of claim 30 wherein said management system includes a plurality of at least the following layers: business management layer, service management layer, network management layer, and element management layer, and wherein a plurality of said layers are correlated within said at least one rule.

Claim 58: (PREVIOUSLY PRESENTED) The management system of claim 30 wherein said management system includes a plurality of at least the following layers: business management layer, service management layer, network management layer, and element management layer, and wherein said network-wide performance problem is a problem within any of said plurality of layers.